Complete Summary

TITLE

Venous thromboembolism (VTE): percent of patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given the day of or day after initial admission (or transfer) to the intensive care unit (ICU) or surgery end date for surgeries that start the day of or the day after ICU admission (or transfer).

SOURCE(S)

Specifications manual for national hospital inpatient quality measures, version 3.0b. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2009 Oct. various p.

Measure Domain

PRIMARY MEASURE DOMAIN

Process

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the Measure Validity page.

SECONDARY MEASURE DOMAIN

Does not apply to this measure

Brief Abstract

DESCRIPTION

This measure* is used to assess the percent of patients who received venous thromboembolism (VTE) prophylaxis or have documentation why no VTE prophylaxis was given the day of or day after initial admission (or transfer) to the intensive care unit (ICU) or surgery end date for surgeries that start the day of or the day after ICU admission (or transfer).

*This is a Joint Commission only measure.

RATIONALE

The vast majority of patients admitted to a critical care unit (CCU) have a major risk factor for venous thromboembolism (VTE), and many have multiple risk factors: advanced age, serious medical illness, and recent surgical procedures or trauma that are common in critically ill patients.Â The use of thromboprophylaxis has been demonstrated to be efficacious in preventing deep venous thrombosis in these patients. Accordingly, The Eighth American College of Chest Physicians Conference on Antithrombotic and Thrombolytic Therapy: Evidence-Based Guidelines recommends that all patients on admission to a critical care unit be assessed for their risk of VTE, with the expectation that appropriate thromboprophylaxis will be instituted.

PRIMARY CLINICAL COMPONENT

Venous thromboembolism (VTE); prophylaxis

DENOMINATOR DESCRIPTION

Patients directly admitted or transferred to intensive care unit (ICU) (see the related "Denominator Inclusions/Exclusions" field in the Complete Summary)

NUMERATOR DESCRIPTION

Patients who received venous thromboembolism (VTE) prophylaxis or have documentation why no VTE prophylaxis was given:

- The day of or the day after intensive care unit (ICU) admission (or transfer)
- The day of or the day after surgery end date for surgeries that start the day of or the day after ICU admission (or transfer)

Evidence Supporting the Measure

EVIDENCE SUPPORTING THE CRITERION OF QUALITY

- A clinical practice guideline or other peer-reviewed synthesis of the clinical evidence
- One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

NATIONAL GUIDELINE CLEARINGHOUSE LINK

- Prevention of venous thromboembolism. American College of Chest Physicians evidence-based clinical practice guidelines (8th edition).

Evidence Supporting Need for the Measure

NEED FOR THE MEASURE

Use of this measure to improve performance

EVIDENCE SUPPORTING NEED FOR THE MEASURE

Geerts WH, Bergqvist D, Pineo GF, Heit JA, Samama CM, Lassen MR, Colwell CW. Prevention of venous thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). Chest2008 Jun;133(6 Suppl):381S-453S. [728 references] PubMed

State of Use of the Measure

STATE OF USE

Current routine use

CURRENT USE

Accreditation
Collaborative inter-organizational quality improvement
Internal quality improvement

Application of Measure in its Current Use

CARE SETTING

Hospitals

PROFESSIONALS RESPONSIBLE FOR HEALTH CARE

Measure is not provider specific

LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED

Single Health Care Delivery Organizations

TARGET POPULATION AGE

Age greater than or equal to 18 years

TARGET POPULATION GENDER

Either male or female

STRATIFICATION BY VULNERABLE POPULATIONS

Unspecified

Characteristics of the Primary Clinical Component

INCIDENCE/PREVALENCE

The reported incidence of deep vein thrombosis (DVT) in intensive care unit (ICU) patients ranges from 10% to almost 100% because of the wide spectrum of conditions in critically ill patients. Despite the limited amount of ICU-specific data about venous thromboembolism (VTE), the risk for this heterogeneous critically ill population is well-established.

EVIDENCE FOR INCIDENCE/PREVALENCE

Geerts WH, Bergqvist D, Pineo GF, Heit JA, Samama CM, Lassen MR, Colwell CW. Prevention of venous thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). Chest2008 Jun;133(6 Suppl):381S-453S. [728 references] PubMed

Geerts WH, Pineo GF, Heit JA, Bergqvist D, Lassen MR, Colwell CW, Ray JG. Prevention of venous thromboembolism: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Chest2004 Sep;126(3 Suppl):338S-400S. [794 references] PubMed

ASSOCIATION WITH VULNERABLE POPULATIONS

Critically ill patients commonly develop deep vein thrombosis (DVT) with rates that vary from 22% to almost 80% depending on patient characteristics.Â In the intensive care unit (ICU), specific groups of patients have been studied to determine the rate of DVT if they do not receive prophylaxis.Â 60% of trauma patients developed DVT within two weeks of admission and neurosurgical patients have an estimated rate of DVT between 22% to 35% without prophylaxis.

EVIDENCE FOR ASSOCIATION WITH VULNERABLE POPULATIONS

Attia J, Ray JG, Cook DJ, Douketis J, Ginsberg JS, Geerts WH. Deep vein thrombosis and its prevention in critically ill adults. Arch Intern Med2001 May 28;161(10):1268-79. [96 references] PubMed

BURDEN OF ILLNESS

Most critically ill patients have multiple risk factors for venous thromboembolism (VTE) placing almost all critical care patients at a moderate to high risk for VTE.Â Some risk factors may have occurred prior to admission while others are acquired during the intensive care unit (ICU) stay when immobilization, paralysis or sedation, mechanical ventilation and vasopressors are required.Â Since thromboprophylaxis is warranted for most patients, the best approach is for every patient to be evaluated for primary prophylaxis since preventing deep vein thrombosis (DVT) is essential to reducing morbidity and mortality associated with pulmonary embolism (PE).

Prevention of fatal PE is not the only objective of thromboprophylaxis. Prevention of symptomatic DVT and PE are also important objectives since these outcomes are associated with considerable acute morbidity, substantial consumption of resources and long-term sequelae of clinical and economic significance. Failure to prevent VTE can result in delayed hospital discharge, readmission, an increased long-term morbidity from post-thrombotic syndrome and recurrent

thrombosis.Â A high number of patients develop residual venous abnormalities, and post-thrombotic syndrome can result in chronic leg swelling, discomfort, dermatitis, and leg ulcers that can result in a reduced quality of life and adversely impact family and community economics.

EVIDENCE FOR BURDEN OF ILLNESS

Geerts WH, Pineo GF, Heit JA, Bergqvist D, Lassen MR, Colwell CW, Ray JG. Prevention of venous thromboembolism: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Chest2004 Sep;126(3 Suppl):338S-400S. [794 references] PubMed

UTILIZATION

There are wide variations in prevention strategies in the intensive care unit (ICU) that range from no prophylaxis to retrievable inferior vena caval filters and anticoagulation.Â The lack of solid evidence for thromboprophylaxis in the ICU may explain some of the varying recommendations and practice disparities.Â Utilization surveys have documented prophylaxis rates of 33% in a medical-surgical ICU, to 65%, to at most about 86%.Â One prospective study of patients in the intensive care unit showed that only 33% received prophylaxis that was administered after an average delay of two days.Â Four studies that studied critical care patients showed that the rate of confirmed deep vein thrombosis (DVT) varied from 13% to 31% of patients that did not receive prophylaxis.Â Fourteen studies reported a compliance rate with some type of thromboprophylaxis as 33% to 100% for critically ill patients.

See also the "Burden of Illness" field.

EVIDENCE FOR UTILIZATION

Attia J, Ray JG, Cook DJ, Douketis J, Ginsberg JS, Geerts WH. Deep vein thrombosis and its prevention in critically ill adults. Arch Intern Med2001 May 28;161(10):1268-79. [96 references] PubMed

Geerts W, Selby R. Prevention of venous thromboembolism in the ICU. Chest2003 Dec;124(6 Suppl):357S-363S. [64 references] PubMed

Keane MG, Ingenito EP, Goldhaber SZ. Utilization of venous thromboembolism prophylaxis in the medical intensive care unit. Chest1994 Jul;106(1):13-4. PubMed

Leizorovicz A, Mismetti P. Preventing venous thromboembolism in medical patients. Circulation2004 Dec 14;110(24 Suppl 1):IV13-9. [42 references] PubMed

Yang JC. Prevention and treatment of deep vein thrombosis and pulmonary embolism in critically ill patients. Crit Care Nurs Q2005 Jan-Mar;28(1):72-9. [31 references] PubMed

COSTS

There is overwhelming evidence that thromboprophylaxis reduces adverse patient outcomes and reduces overall costs.Â Studies of medical and surgical intensive care unit (ICU) patients have shown that about 10% have proximal deep vein thrombosis (DVT) on admission to the unit, and within the first week of intensive care unit admission, 10% to 30% of medical and surgical ICU patients will develop DVT.Â The most effective strategy to decrease the consequences of thromboembolic disease is to use routine thromboprophylaxis.

See also the "Burden of Illness" field.

EVIDENCE FOR COSTS

Attia J, Ray JG, Cook DJ, Douketis J, Ginsberg JS, Geerts WH. Deep vein thrombosis and its prevention in critically ill adults. Arch Intern Med2001 May 28;161(10):1268-79. [96 references] PubMed

Geerts WH, Bergqvist D, Pineo GF, Heit JA, Samama CM, Lassen MR, Colwell CW. Prevention of venous thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). Chest2008 Jun;133(6 Suppl):381S-453S. [728 references] PubMed

Geerts WH, Pineo GF, Heit JA, Bergqvist D, Lassen MR, Colwell CW, Ray JG. Prevention of venous thromboembolism: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Chest2004 Sep;126(3 Suppl):338S-400S. [794 references] PubMed

Harris LM, Curl GR, Booth FV, Hassett JM Jr, Leney G, Ricotta JJ. Screening for asymptomatic deep vein thrombosis in surgical intensive care patients. J Vasc Surg1997 Nov;26(5):764-9. PubMed

Kucher N, Koo S, Quiroz R, Cooper JM, Paterno MD, Soukonnikov B, Goldhaber SZ. Electronic alerts to prevent venous thromboembolism among hospitalized patients. N Engl J Med2005 Mar 10;352(10):969-77. PubMed

Schonhofer B, Kohler D. Prevalence of deep-vein thrombosis of the leg in patients with acute exacerbation of chronic obstructive pulmonary disease. Respiration1998;65(3):173-7. PubMed

Institute of Medicine National Healthcare Quality Report Categories

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Safety
Timeliness

Data Collection for the Measure

CASE FINDING

Users of care only

DESCRIPTION OF CASE FINDING

All patients, age 18 years and older, directly admitted or transferred to intensive care unit (ICU) (see the "Denominator Inclusions/Exclusions" field)

DENOMINATOR SAMPLING FRAME

Patients associated with provider

DENOMINATOR INCLUSIONS/EXCLUSIONS

Inclusions
Patients directly admitted or transferred to intensive care unit (ICU)

Exclusions

- Patients less than 18 years of age
- Patients who have a hospital length of stay (LOS) less than two days and greater than 120 days
- Patients with *Comfort Measures Only* documented
- Patients enrolled in clinical trials
- Patients with ICU LOS less than one day without venous thromboembolism (VTE) prophylaxis administered and documentation for no VTE prophylaxis
- Patients with *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Principal or Other Diagnosis Code* of Obstetrics or VTE as defined in Appendix A, Table 7.02, 7.03, or 7.04 of the original measure documentation
- Patients with *ICD-9-CM Principal Procedure Code* of Surgical Care Improvement Project (SCIP) VTE selected surgeries as defined in Appendix A, Tables 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24 of the original measure documentation that start the day of or the day after ICU admission or transfer

RELATIONSHIP OF DENOMINATOR TO NUMERATOR

All cases in the denominator are equally eligible to appear in the numerator

DENOMINATOR (INDEX) EVENT

Clinical Condition
Institutionalization
Therapeutic Intervention

DENOMINATOR TIME WINDOW

Time window brackets index event

NUMERATOR INCLUSIONS/EXCLUSIONS

Inclusions
Patients who received venous thromboembolism (VTE) prophylaxis or have documentation why no VTE prophylaxis was given:

- The day of or the day after intensive care unit (ICU) admission (or transfer)
- The day of or the day after surgery end date for surgeries that start the day of or the day after ICU admission (or transfer)

Exclusions
None

MEASURE RESULTS UNDER CONTROL OF HEALTH CARE PROFESSIONALS, ORGANIZATIONS AND/OR POLICYMAKERS

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

NUMERATOR TIME WINDOW

Fixed time period

DATA SOURCE

Administrative data
Medical record

LEVEL OF DETERMINATION OF QUALITY

Individual Case

PRE-EXISTING INSTRUMENT USED

Unspecified

Computation of the Measure

SCORING

Rate

INTERPRETATION OF SCORE

Better quality is associated with a higher score

ALLOWANCE FOR PATIENT FACTORS

Unspecified

STANDARD OF COMPARISON

External comparison at a point in time
External comparison of time trends
Internal time comparison

Evaluation of Measure Properties

EXTENT OF MEASURE TESTING

This measure has undergone a rigorous process of public comment and two phases (alpha and pilot [beta]) of testing that included reliability testing.Â The pilot specifications and algorithms were tested at over 40 hospitals (5,713 cases) for six months during 2007.

EVIDENCE FOR RELIABILITY/VALIDITY TESTING

Information about the Candidate Voluntary Consensus Standards for Hospital Care, additional priorities, 2007, detailed performance measure evaluation [unpublished].

Identifying Information

ORIGINAL TITLE

VTE-2: intensive care unit venous thromboembolism prophylaxis.

MEASURE COLLECTION

National Hospital Inpatient Quality Measures

MEASURE SET NAME

Venous Thromboembolism (VTE)

SUBMITTER

Centers for Medicare & Medicaid Services
Joint Commission, The

DEVELOPER

Centers for Medicare & Medicaid Services/The Joint Commission

FUNDING SOURCE(S)

All external funding for measure development has been received and used in full compliance with The Joint Commission's Corporate Sponsorship policies, which are available upon written request to The Joint Commission.

COMPOSITION OF THE GROUP THAT DEVELOPED THE MEASURE

Technical advisory panel of stakeholders. The list of participants is available at http://www.jointcommission.org/NR/rdonlyres/1A4DF024-92D7-42D0-B997-348193843D89/0/VTETechnicalAdvisoryPanel.pdf.

FINANCIAL DISCLOSURES/OTHER POTENTIAL CONFLICTS OF INTEREST

Expert panel members have made full disclosure of relevant financial and conflict of interest information in accordance with the Joint Commission's Conflict of Interest policies, copies of which are available upon written request to The Joint Commission.

ENDORSER

National Quality Forum

ADAPTATION

Measure was not adapted from another source.

RELEASE DATE

2009 Oct

MEASURE STATUS

This is the current release of the measure.

SOURCE(S)

Specifications manual for national hospital inpatient quality measures, version 3.0b. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2009 Oct. various p.

MEASURE AVAILABILITY

The individual measure, "VTE-2: Intensive Care Unit Venous Thromboembolism Prophylaxis," is published in "Specifications Manual for National Hospital Inpatient Quality Measures." This document is available from The Joint Commission Web site. Information is also available from the Centers for Medicare & Medicaid Services (CMS) Web site. Check The Joint Commission Web site and CMS Web site regularly for the most recent version of the specifications manual and for the applicable dates of discharge.

NQMC STATUS

The Joint Commission submitted this NQMC measure summary to ECRI Institute on September 18, 2009. This NQMC summary was reviewed accordingly by ECRI Institute on November 10, 2009.

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